

2006

First Quarter

ASAP

NASA AEROSPACE SAFETY ADVISORY PANEL

National Aeronautics and Space Administration

Washington, DC 20546

VADM Joseph W. Dyer USN, (Ret.), Chairman

March 17, 2006

The Honorable Michael D. Griffin
Administrator
National Aeronautics and Space Administration
Washington, DC 20546

Dear Dr. Griffin:

This report includes the results of our first formal meeting in 2006 at the Marshall Space Flight Center. Our two new Panel members are onboard and coming up to speed. During the first Quarter, Panel members also observed other key NASA activities such as the semi-annual Intercenter Aircraft Operations Panel meeting in Orlando and the University of North Dakota Site Visit for the DC-8.

After our meetings at Marshall, we carried away concern regarding the External Tank. More specifically, we did not receive a crisp answer to the question – “How will the team determine the tank is ‘good to go?’”

The Panel would like to better understand the risk assessment process that will be used to: 1) clear the External Tank and modifications for launch; and 2) determine total mission risk for the STS-121 Go/No-Go decision at the FRR. Additionally, the Panel recommends that NASA use a second and independent set of eyes (e.g. NESC) to validate the risk assessment results and give management more confidence in the overall risk situation during the critical decision-making events leading to launch, operations, and recovery.

With great respect, I submit our First Quarterly Report for 2006.

Sincerely,

SIGNED

Joseph W. Dyer, VADM, USN (Ret)

Chairman

Aerospace Safety Advisory Panel

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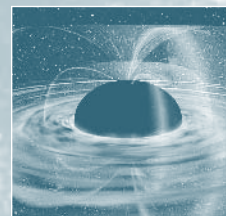
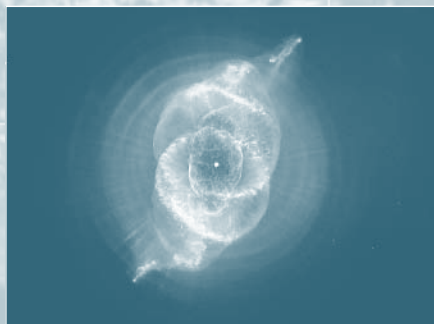
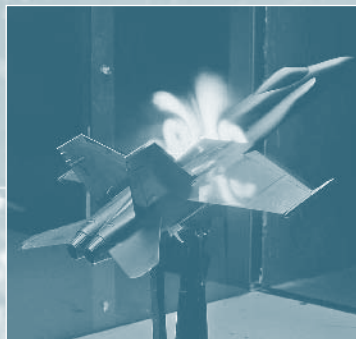
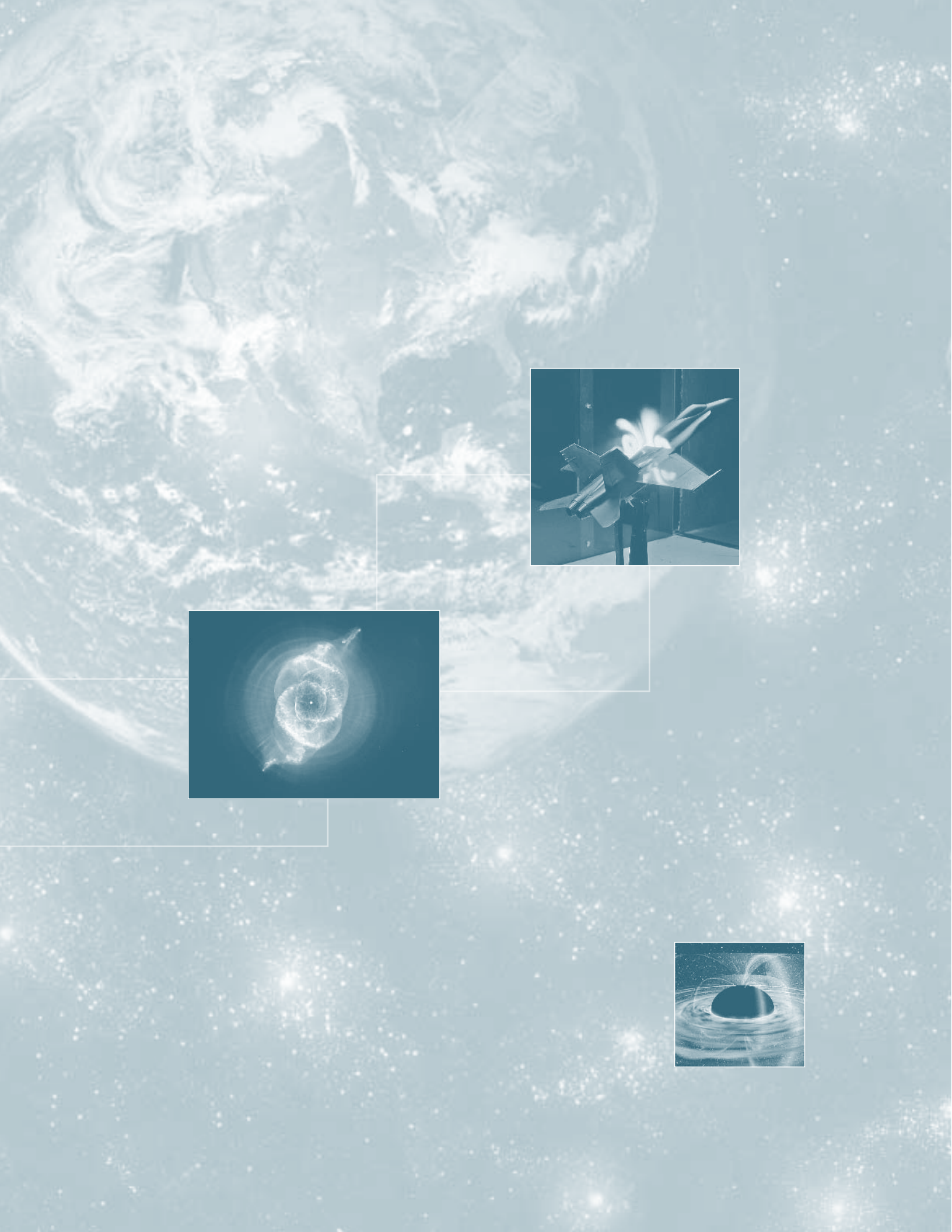
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FIRST QUARTER

I. Introduction

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I. INTRODUCTION

This is the First Quarterly Report for the Aerospace Safety Advisory Panel in 2006.

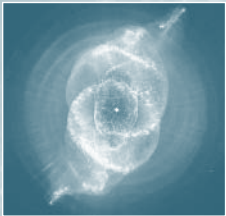
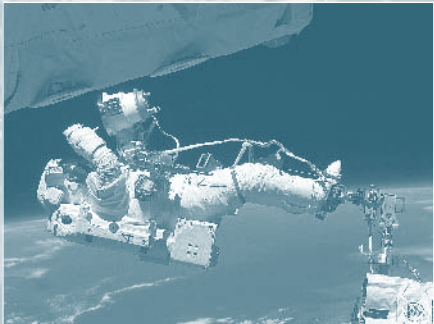
NASA chartered the Panel to review, evaluate, and advise on elements of NASA's safety and quality systems, including industrial and systems safety, risk management and trend analysis, and the management of these activities.



FIRST QUARTER

II. Charter

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II. CHARTER

1.0 OFFICIAL DESIGNATION

This charter sets forth the purpose for the panel officially designated as the Aerospace Safety Advisory Panel originally established under Section 6 of the National Aeronautics and Space Administration Authorization Act, 1968, as amended (P.L. 90-67, codified at 42 U.S.C. § 2477). Having determined that it is in the public interest in connection with the performance of Agency duties under the law, and with the concurrence of the General Services Administration, the NASA Administrator hereby renews and amends the Panel's charter, pursuant to the Federal Advisory Committee Act (FACA), 5 U.S.C.App. §§ 1 et seq.

2.0 OBJECTIVES AND SCOPE

The Panel will review, evaluate, and advise on elements of NASA's safety and quality systems, including industrial and systems safety, risk management and trend analysis, and the management of these activities. Priority will be given to those programs that involve the safety of human flight.

3.0 PERIOD

The Panel will perform its duties for the period specified in Section 9.0.

4.0 REPORTING

The Panel will function in an advisory capacity to the Administrator, and through the Administrator, to those organizational elements responsible for the management of the NASA safety and quality activities.

5.0 PANEL ORGANIZATION AND SUPPORT

5.1 Panel Members: As originally set forth in 42 U.S.C. § 2477, the Panel will consist of a maximum of nine members who will be appointed by the NASA Administrator. Consistent with the two-year duration of this Charter, members will be appointed for two years and could be reappointed by the NASA Administrator up to a maximum of six years.

5.2 Panel Chairman: As originally set forth in 42 U.S.C. § 2477, one member shall be designated by the Panel as its Chairman.

5.3 **Panel Composition:** The Panel will be comprised of recognized safety, management, and engineering experts from industry, academia, and other government agencies.

5.4 **NASA Membership:** As originally set forth in 42 U.S.C. § 2477, not more than four Panel members shall be chosen from the officers and employees of the NASA.

5.5 **Panel Support:** NASA Headquarters will provide a staff, to be comprised of full-time NASA employees, to provide support to the Panel.

6.0 PANEL DUTIES

6.1 The duties of the Panel, as originally set forth in 42 U.S.C. § 2477, shall continue: "The Panel shall review safety studies and operations plans referred to it and shall make reports thereon, shall advise the Administrator with respect to the hazards of proposed or existing facilities and proposed operations and with respect to the adequacy of proposed or existing safety standards and shall perform such other duties as the Administrator may request."

6.2 **Quarterly Report:** The Panel shall submit quarterly reports to the Administrator. Findings that are time critical will be reported immediately.

6.3 **Special Reviews and Evaluations:** The Administrator may request certain special studies, reviews, and evaluations. The Panel will submit reports with comments and recommendations as deemed appropriate by the Panel to the Administrator within the timeline specified by the Administrator.

7.0 ESTIMATED ANNUAL COSTS

The NASA Headquarters will provide the budget for operation of the Panel. The estimated annual operating cost totals \$555,000 including 2.5 work-years for staff support.

8.0 ESTIMATED NUMBER AND FREQUENCY OF MEETINGS

8.1 **Meetings:** There will be four full Panel meetings each year to perform their duties as described in Section 6.0.

8.2 **Special Meetings:** Special meetings of the Panel may be required.

9.0 DURATION

This Charter shall become effective upon the filing of this Charter with the appropriate U.S. Senate and House of Representative oversight committees. It shall terminate two years from the date of the filing of this Charter unless renewed or terminated earlier by the NASA Administrator.

SIGNED

Michael D. Griffin

NASA Administrator

November 18, 2005

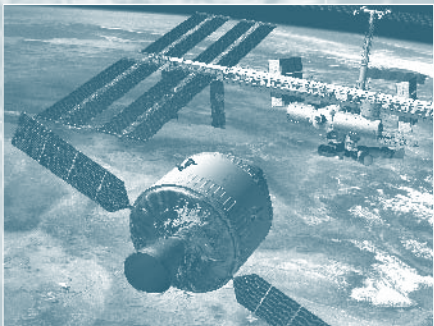
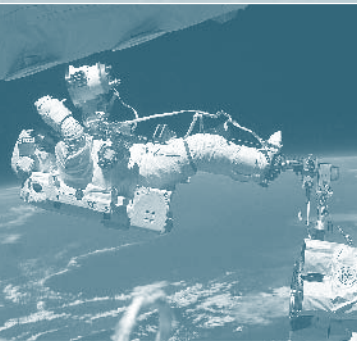
Date



FIRST QUARTER

III. Aerospace Safety Advisory Panel Membership

ASAP





VICE ADMIRAL JOE DYER USN, (RET)

- Aerospace Safety Advisory Panel Chair
- Executive VP/General Manager, Military Government & Industrial Division, iRobot Corporation
- Former Commander, Naval Air Systems Command

Vice Admiral Joseph W. Dyer was commissioned through the Aviation Reserve Officer Candidate Program following graduation from North Carolina State University with a bachelor of science degree in chemical engineering. He subsequently earned a master of science degree in financial management from the Naval Post Graduate School, Monterey, CA. He received his wings in March 1971, and was selected as one of the first “Nuggets” (first tour aviators) to fly the Mach 2, RA-5C *Vigilante*. He flew nationally tasked reconnaissance missions in both the eastern and western hemispheres.

From April 1991 to December 1993, he was the Navy’s chief test pilot. January 1994 to April 1997, he served as F/A-18 program manager leading the engineering and manufacturing development (E&MD) effort on the new F/A-18E/F, the continued production and fleet support of the F/A-18C/D and all F/A-18 foreign military sales. The F/A-18 program won the Department of Defense Acquisition Excellence Award and the Order of Daedalian during this period. Admiral Dyer was assigned as the Commander, Naval Air Warfare Center Aircraft Division, Patuxent River, in July 1997 and one month later assumed additional responsibilities as the Naval Air Systems Command, Assistant Commander for Research and Engineering. In June 2000, he was assigned as the Commander, Naval Air Systems Command.

Admiral Dyer is executive vice president and general manager of the iRobot Corporation’s Military Government & Industrial Division. In this position, he works closely with the U.S. Department of Defense to develop reconnaissance robots that will change the way wars are fought in the future.



DR. DAN CRIPPEN

- Former Director of the Congressional Budget Office
- Former Member of the NASA Stafford-Covey Return to Flight Task Group

Dr. Dan Crippen has a strong reputation for objective and insightful analysis. He served, until January 3rd 2004, as the fifth Director of the Congressional Budget Office. His public service positions also include Chief Counsel and Economic Policy Adviser to the Senate Majority Leader (1981-1985); Deputy Assistant to the President for Domestic Policy (1987-1988); and Domestic Policy Advisor and Assistant to the President for Domestic Policy (1988 -1989), where he advised the President on all issues relating to domestic policy, including the preparation and presentation of the federal budget. He has provided service to several national commissions, including membership on the National Commission on Financial Institution Reform, Recovery and Enforcement.

Dr. Crippen has substantial experience in the private sector as well. Before joining the Congressional Budget Office, he was a principal with Washington Counsel, a law and consulting firm. He has also served as Executive Director of the Merrill Lynch International Advisory Council and as a founding partner and Senior Vice President of The Duberstein Group.

Dr. Crippen received a bachelor of arts degree from the University of South Dakota in 1974, a master of arts from Ohio State University in 1976, and doctor of philosophy degree in public finance from Ohio State in 1981.



DR. AMY DONAHUE

- Assistant Professor of Public Administration at the University of Connecticut Department of Public Policy
- Former Member of the NASA Stafford-Covey Return to Flight Task Group

Dr. Amy K. Donahue is assistant professor of public policy at the University of Connecticut, where she teaches in the master of public administration and master of survey research programs. Her research focuses on the productivity of emergency services organizations and on the nature of citizen demand for public safety services. She is author of published work about the design, management, and finance of fire departments and other public agencies. For the past two years, Dr. Donahue has served as a technical advisor to the Department of Homeland Security's Science and Technology Directorate, helping to develop research and development programs to meet the technological needs of emergency responders. From 2002–2004, Dr. Donahue served as senior advisor to the Administrator for Homeland Security at the National Aeronautics and Space Administration (NASA). She was the agency's liaison to the Department of Homeland Security and the Homeland Security Council and identified opportunities for NASA to contribute to homeland security efforts across government. In 2003, Dr. Donahue spent three months in Texas helping manage the Columbia recovery operation, an intergovernmental response that involved 450 organizations and 25,000 responders. Prior to her affiliation to the University of Connecticut, Dr. Donahue was a senior research associate at the Alan K. Campbell Public Affairs Institute at Syracuse University. She also has many years of training and field experience in an array of emergency services-related fields, including managing a 911 communications center, and working as a firefighter and emergency medical technician in Fairbanks, Alaska and upstate New York. As a Distinguished Military Graduate of Princeton's Reserve Officer Training Corps, she served in the U.S. Army on active duty for four years in the 6th Infantry Division, rising to the rank of Captain. Dr. Donahue holds her Ph.D. in public administration and her M.P.A. from the Maxwell School of Citizenship and Public Affairs at Syracuse University. Her B.A. from Princeton University is in geological and geophysical sciences.



MR. JOHN FROST

- Former Chief, Safety Office, US Army Aviation and Missile Command (retired)
- Former Chief, Safety Office, US Army Missile Command

Mr. John C. Frost is an independent safety consultant who retired from Federal Service with 33 years of Safety Engineering experience. Mr. Frost was the Chief of Safety for the Army Aviation and Missile Command (AMCOM) with worldwide responsibility for missile and aircraft safety. Mr. Frost directed and implemented a comprehensive System Safety Program for all aspects of a major high technology organization that develops, fields and supports all of the state-of-the-art aircraft and missile/rocket systems for the Army worldwide and provides facilities and services for approximately 20,000 residents, workers, visitors and contractors on Redstone Arsenal. Prior to this, he served as the Chief of the MICOM Safety Office and held other supervisory positions leading various Missile Command (MICOM) System Safety, Radiation Protection, Explosive Safety, Test Safety and Installation Safety program elements. Mr. Frost began his Federal career in the Safety Office of the Army's Electronics Command at Fort Monmouth, New Jersey, where he became Chief of System Safety Engineering.

Mr. Frost was born and raised in Birmingham, Alabama and earned a Bachelor of Science in Electrical Engineering from the University of Virginia where he was a DuPont Scholar. He completed a Master of Science specializing in Safety Engineering from Texas A&M and an additional year of advanced Safety Engineering training. Mr. Frost is a Senior member of the International System Safety Society, a Professional Member of the American Society Of Safety Engineers, and remains active in various System Safety organizations and initiatives. He was previously registered in Massachusetts as a Professional Engineer in the specialty of Safety Engineering and as a Certified Safety Professional. He and his wife Linda, of 33 years, have two sons, Christopher and Hampton.



MS. DEBORAH GRUBBE, P.E.

- Former consultant, Columbia Accident Investigation Board
- Vice President—Group Safety; BP p.l.c.
- DuPont Corporate Director—Safety and Health (retired)

Ms. Deborah L. Grubbe is vice president—Group Safety, for BP plc. Based in London, she is accountable for providing global safety leadership in all business areas; exploration and production, refining and marketing, gas, solar, and renewables. Formerly, Deborah was employed by DuPont in Wilmington Delaware, USA, where she held corporate director positions in safety, operations, and engineering. Her many assignments have included capital project implementation, strategic safety assessments, manufacturing, management, and human resources.

Deborah received a bachelor of science degree in chemical engineering from Purdue University and was a Winston Churchill Fellow at the University of Cambridge, England. She is the former co-chair of the Benchmarking and Metrics Committee of the Construction Industry Institute, and is vice chair of the National Institute of Standards and Technology Visiting Committee on Advanced Technology. As part of the National Research Council, she has also advised the US Army on the demilitarization of the US chemical weapons stockpile. In 2002, Ms. Grubbe was honored as Engineer of the Year in the State of Delaware.



MR. JOHN MARSHALL

- Independent Aviation Consultant
- Former Delta Airlines, Vice President Corporate Safety and Compliance

Mr. John C. Marshall is an independent aviation consultant who formerly was vice president - Corporate Safety and Compliance for Delta Air Lines.

Mr. Marshall had responsibility for six departments at Delta, including Flight Safety, Industrial Safety, Environmental Services, Emergency Planning and Operations, Safety Analysis and Quality Assurance, and Security. Inherent in these organizations are FAA, DOT, DoD, OSHA, EPA, TSA, and DHS compliance-driven programs for accident prevention, accident investigations, accident response, and a wide range of security programs. He also has collateral responsibilities for integrating safety, compliance, and security programs for Delta's wholly-owned subsidiaries including Comair, Atlantic Southeast Airlines, Delta Global Services, and Delta Technologies, into Delta's mainstream programs. Under his leadership, Delta routinely was recognized for industry-leading programs focused on reducing aircraft mishaps, employee injuries, and aircraft ground damages, while enhancing environmental compliance programs and fostering the highest standards of security for world-wide commercial airline operations.

Mr. Marshall recently served as the industry co-chair of the Commercial Aviation Safety Team (CAST). CAST is a joint industry-government program to develop and implement an integrated, data-driven strategy to reduce the U.S. commercial aviation fatal accident rate by 80 percent by 2007. Participants include aircraft and engine manufactures, passenger and cargo airlines, labor unions, Flight Safety Foundation, Air Transport and Regional Airline Associations, NASA, DoD, and the FAA. Mr. Marshall is also the past Chairman of the Air Transport Association of America's Safety Council and the Society of Automotive Engineer's Aerospace Symposium. He currently serves on boards for the National Defense Transportation Association's Military Subcommittee, Safe America (a nation-wide non-profit organization focusing on safety awareness), the Flight Safety Foundation, and the Nature Conservancy's International Leadership Council.

Mr. Marshall gained world-wide aviation experience through his 26-year aviation career with the U.S. Air Force. His Air Force assignments included duties as a fighter pilot, special assistant to the Air Force Vice Chief of Staff, fighter squadron commander, base commander, and fighter wing commander. During his career, he primarily flew F-4s, F-15s, A-10s, and F-16s, but has experience in a variety of other aircraft as well. Mr. Marshall later served as the Inspector General of the Pacific Air Forces and then became the Director of Operations of the Pacific Air Forces. While in the Pacific, he oversaw the safe and efficient operations of over 400 combat aircraft, including developing plans and policies used for executing his command's annual flying program. In his last assignment, he served as the United State's Director of Security Assistance for the Middle East where he was responsible for all sales, marketing, training, and logistic support between the United States and eleven countries in the Middle East, Africa, and Southwest Asia during and immediately after the Gulf War.

Mr. Marshall received his Bachelor's degree in civil engineering from the Air Force Academy in Colorado. He also is a graduate from the National War College, holds a master of arts degree in personnel management from Central Michigan University, and a master of science degree in civil engineering (environmental) from the University of Hawaii.



MS. JOYCE A. MCDEVITT, P.E.

- Systems Safety Consultant
- Former Safety Program Manager, Futron Corporation and Computer Sciences Corporation
- Former NASA System Safety Engineer (retired)

Ms. Joyce McDevitt is a Systems Safety Consultant working with the John-Hopkins University's Applied Physics Laboratory (APL) to develop and launch the Pluto-New Horizons Mission Spacecraft. Prior to entering consulting full-time, she was a program manager with Futron Corporation, Bethesda, MD and Computer Sciences Corporation, Springfield, VA where she provided range safety and system safety support to government and commercial clients, including project safety responsibilities for APL's Mid-course Space Experiment Spacecraft. She also supported the Commercial Space Transportation Licensing and Safety Division of the Federal Aviation Administration. In addition, she served as a National Research Council committee member for Space Launch Safety and Safety of Tourist Submersibles studies.

During her nearly 30 years of Civil Service to NASA Headquarters, the Air Force Systems Command, and the Naval Ordnance Station, Ms. McDevitt's safety experience included space, aeronautical, facility, and weapons systems, and propellant, explosive, and chemical processes. She has developed and managed safety programs, hazard analyses, safety risk assessments, safety policies and procedures, investigations of mishaps, and safety training. She retired from the federal government in 1987.

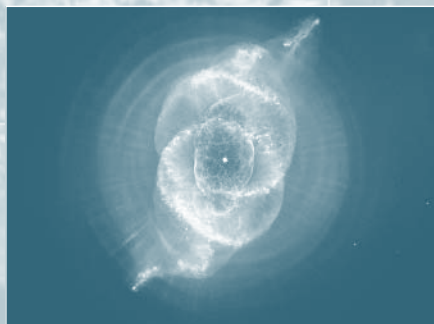
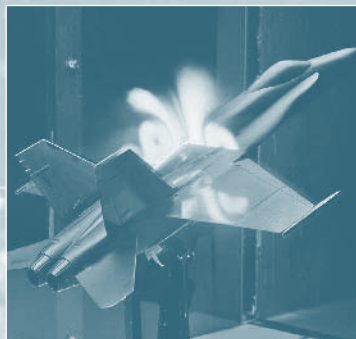
Ms. McDevitt received a B.S. in Chemical Engineering from the University of New Hampshire and an M.S. in Engineering from Catholic University. She is a registered Professional Engineer in Safety Engineering and a member of the System Safety Society.



FIRST QUARTER

IV. First Quarterly
Meeting Minutes

ASAP



National Aeronautics and Space Administration

AEROSPACE SAFETY ADVISORY PANEL PUBLIC MEETING

February 3, 2006

**Marshall Space Flight Center
Huntsville, Alabama**

MEETING MINUTES

SIGNED

John D. Marinaro
Executive Director

SIGNED

VADM Joseph W. Dyer, USN (Ret)
Panel Chair

**AEROSPACE SAFETY ADVISORY PANEL (ASAP)
PUBLIC MEETING**

February 3, 2006

**Marshall Space Flight Center
Huntsville, AL**

Panel Attendees

Dr. Dan Crippen (serving as Meeting Chairman)
Mr. John C. Marshall
Ms. Deborah L. Grubbe
Dr. Amy K. Donahue
Mr. John Frost
Ms. Joyce McDevitt
Mr. John D. Marinaro, Executive Director

Panel Members Not In Attendance

Vice Admiral Joseph W. Dyer, USN (Ret), Chairman

Observers

Mr. David King, NASA MSFC
Mr. Charles Chitwood, NASA MSFC
Mr. Chris Scolese, NASA HQ
Mr. Roy Malone, NASA MSFC
Mr. Michael Ralsky, NASA HQ
Mr. Dan Dumbacher, NASA MSFC
Ms. Susan Burch, NASA HQ
Ms. Pat Doty, NASA MSFC
Ms. Gena Cox, NASA MSFC
Mr. Edward Ingraham, NASA HQ
Mr. Walter Hussey, NASA HQ
Ms. Robin Witter, NASA HQ

Mr. Bill Kilpatrick-Sigmattech
Mr. Dave Hall- IBM
Mr. Dave Schulz- South

Telecon Observers

Kimm Groshong, New Scientist
Irene Klotz, Reuters
Don Nelson, NASA Retired Engineer
John Casper, NASA
Bill Douglas, NASA
Lindy Forten-Berry, NASA
Craig Young, NASA

INTRODUCTION

Mr. John Marinaro, Executive Director, opened the first quarterly meeting of the Aerospace Safety Advisory Panel (ASAP), and asked for names of those who attended via telecon and live audience (names provided above). Mr. Marinaro explained that members of the public were permitted to submit questions during this session. Dr. Dan Crippen represented ASAP Chairman Joseph Dyer; members of the ASAP introduced themselves.

OPENING COMMENTS

Dr. Crippen thanked Marshall Space Flight Center (MSFC) for graciously hosting the meeting. He noted a very impressive array of capabilities and personnel at MSFC, and recognized that the center is known for setting standards in safety and training. MSFC has also been critical for the Return to Flight (RTF) effort, especially in addressing foam engineering issues, and is a major player in the Exploration effort (launch vehicles for CLV/CEV). The center is certainly capable of fulfilling its new role.

PUBLIC STATEMENTS/COMMENTS

The first 30 minutes of the meeting were reserved for public comment on safety in NASA. Mr. Don Nelson provided a written statement to the Panel and was afforded the opportunity to make a statement at this time.

Mr. Don Nelson, a member of the public audience, introduced himself via teleconference as having a background in launch vehicles and design, and having formerly been a member of the Shuttle design team. He submitted a written statement regarding the current Exploration designs to the Panel prior to the meeting. His verbal statement paralleled his written statement and he expressed his concerns and opinion regarding the following: flight control capability; the introduction of a fifth segment creating a very top-heavy vehicle; concern about the stack related to the growing Crew Exploration Vehicle (CEV) weight; and, perceived failure rates regarding this type of design and application.

Mr. John Frost asked if Mr. Nelson was concerned that the failure rate goal was too high or poorly assessed. Mr. Nelson replied that his point was that a 1-in-2000 failure rate was not a historically viable figure. With the current CEV configuration, he felt that the rate was more like 1-in-25 or 50.

Mr. Marshall read a portion of Mr. Nelson's written statement where he concluded that the only solution for the next-generation crew vehicle was a reusable vehicle that was developed and operated by a non-government enterprise. Marshall then queried Mr. Nelson if his assessment was based on a cost/operations perspective, safety concerns, or both. Mr. Nelson stated that his opinion was based on a 1999 study that included both factors.

Dr. Crippen took Mr. Nelson's submission under consideration for a NASA response; the ASAP is not a technical body, but it will certainly consider safety allegations. Dr. Crippen could not

confirm or deny Mr. Nelson's assertions on technical grounds. Mr. Nelson added that he did not think the National Research Council (NRC) had done a proper evaluation of the CEV/CLV (Crew Launch Vehicle). Dr. Crippen assured Mr. Nelson that the panel would consider this assertion in a NASA response.

No other members of the public requested time to make a public comment nor submitted any written comments.

CONTINUED OPENING REMARKS

Dr. Crippen went on to briefly review the previous two days spent at MSFC. The ASAP had arrived at the center with the intent to review the establishment of the independent Technical Authority (ITA) prescribed by the CAIB, center Safety and Mission Assurance functions, the STS-121 and the External Tank (ET) with respect to Return to Flight (RTF) activities, briefings on the CLV, and the MSFC physical plant. This fact-finding endeavor will be reported to the public. There is also a new legislative mandate to consider, as recently outlined by Congress to the ASAP in the NASA Authorization Act of 2005.

MSFC OVERVIEW

Dr. Amy Donahue reported first on a general overview of MSFC. She noted that MSFC has a long history in spacecraft, robotics, ISS operations, and rockets, with quite a bit of effort being spent on the Shuttle's high-energy propulsion components such as the ET, Space Shuttle Main Engine, and Solid Rocket Booster systems. ASAP has found the center's expertise to be very impressive, with tremendous implications for the next generation of vehicles. Recent accomplishments include the shipment of a new oxygen system for ISS to the Kennedy Space Center. She noted that MSFC also conducts science experiments aboard the ISS, and was an integral player in the Gravity Probe B science mission. The big endeavor of course is the development of the Cargo and Crew Launch Vehicles under the Constellation Program. MSFC is called to operate on the edge of "what we know and what we knew," with a significant amount of risk inherent in the process.

FACA ETHICS BRIEFING

Mr. Frost reviewed a Federal Advisory Committee Act (FACA) briefing on how federal advisory committees operate, commenting that advisory committees date back to the era of George Washington. By FACA rules, the ASAP (founded in 1967) is required to maintain a balanced representation, engage in open public meetings accompanied by published minutes, provide full access to written material, maintain documents for public access, and retain a designated federal official on committee. Members of the panel are appointed by the Administrator, and all members are required to provide financial disclosure statements. ASAP members are subject to all federal rules governing civil servants.

TECHNICAL AUTHORITY

Dr. Crippen reported on the ongoing development of Technical Authority, a NASA entity developed in response to CAIB recommendations regarding culture and organization. The CAIB had determined that culture and organization played a large role in the loss of Columbia. A major component of the independent nature of the iTA is the recommendation for funding and organizational reporting separate from the program. The CAIB recommended the iTA be established for a clearer demarcation from the Program for accountability. NASA had originally established a system of warrants and warrant holders to address this issue; some changes have been made to this approach by the new Administrator. The responsibility for iTA was originally placed in the Office of the Chief Engineer (OCE). The new design has Technical Authority administered through the centers, such that center directors are in the line of authority, along with the engineering directors, discipline engineers and chief engineers for each project. The principal change is more center authority. Management of center hires is significantly influenced by the OCE for lead engineers. NESC will be preserved in order to help with technical questions. The technical authority function will be financed by Headquarters and the programs will remain responsible for schedule and cost. The concept of technical conscience/excellence will also include personal accountability. NASA is also promoting organizational responsibility for adequate training and the provision of tools and environment necessary to do the work. Openness to criticism will be encouraged. The full Technical Authority process is scheduled to be implemented this year and its primary components have been put in place. The ASAP also received a briefing from the NASA Chief Engineer during the fact-finding sessions. The panel agrees that this conception of iTA seems to be consistent with what CAIB had in mind.

Mr. Marshall commented that independence of technical authority has been an issue within NASA for some time and that the Administration had in the past addressed the matter with varying success using different approaches. However, he noted that he was pleased to see that the current plan was moving forward in the right direction. He also noted that he was pleased to see the release of a NASA Interim Directive (NIT) dealing with iTA, which over time would provide a document that will codify and standardize NASA's approach. Finally, Marshall commented that while the NIT was an important step, understanding how each Center and program will implement the NIT's approach to iTA will be the true measure that will determine its success.

Dr. Crippen applauded the fact that while the CAIB had recommended iTA for the Shuttle program only; NASA was nonetheless adopting the concept across all programs, in effect doing better than the CAIB had required.

SMA

Mr. Frost reported on MSFC Safety and Mission Assurance (SMA) activities, mentioning his background in systems safety. Safety is a critical element of mission success and is recognized as an identified core value of NASA. Mr. Frost was pleased to find a direct line of authority of the SMA Director to the Center Director, Mr. David King. SMA's technical expertise and independence positively support the roles of Project Management and the Technical Authority in mission accomplishment. He noted SMA's awareness of their technical demographics and their goal of adjusting expertise to fit the needs of changing programs, and their plans to grow individuals into areas where expertise is needed. MSFC is diligently educating its workforce. He noted, with approval, documentation of desired minimum characteristics of key specialties. He also noted that BRAC related DOD reassignments of major DOD activities to Redstone Arsenal could have a negative impact on available systems engineering and systems safety engineering personnel if the situation is not managed properly. Mr. Frost commended the SMA relationship to iTA and project management, approving the fact that individuals, and not committees, sign off on decisions.

SAFETY WITHIN CENTERS

Ms. Deborah Grubbe reviewed center institutional safety issues. In reviewing institutional safety, she found center strengths to be the following: excellent vision, improvements in lost time rates, and recognition that safety is a continuous improvement journey. Leadership is involved through a team structure, and while the management role is good, it can be improved. She cited an extensive use of lagging indicators and suggested that MSFC consider and develop leading indicators to better predict likelihood of losses. Improvements can be made in contractor safety management from a systems standpoint. Ms. Grubbe observed good work in culture, but noted that this work must be built upon, identified, captured and addressed. She noted that MSFC had identified a training deficiency regarding chemical-handling and took on the job to improve it; it is good that MSFC recognized this issue.

Contractor safety management needs to be more integrated and transparent, at the leadership, strategic and operational levels. The experience modification rate (EMR) must be less than 1.0; this may not be the case across the board for all contractors. MSFC should benchmark more with the private sector. The process of hiring contractors should be modified so that it is not the weakest link in the safety chain. The ASAP had made this recommendation at KSC. Ms. Grubbe expressed the hope that there would be more uptake of this learning at other centers.

In terms of culture change, improvements have been under way both at MSFC and NASA-wide, laying a foundation for good next steps. There are several areas of focus: training and development of concepts of leadership; teamwork and communications between supervisor and subordinate; more transparency; and addressing safety with a balance of carrot and stick (i.e. there will be ramifications to the leaders when failures occur).

ASAP FEEDBACK

Ms. Joyce McDevitt reported on a lunch seminar, which provided a valuable exchange between MSFC and ASAP participants, highlighting ways in which the ASAP can further provide value to NASA. The dialogue began by one of Marshall's participants noting that NASA historically had regarded the ASAP as a committee with a solid reputation for making a positive difference to NASA's operations. Another individual remarked that the ASAP helps the centers define what they know and don't know and supplements Agency audit activities, which NASA has gratefully acknowledged in the past. Ms. McDevitt followed by saying she was pleased to learn that oftentimes there are natural follow-up actions to ASAP meetings that go beyond the recommendations since NASA also takes informal recommendations quite seriously. All agreed that routine center visits by the ASAP were helpful and productive.

Feedback also indicated that there is some opportunity for improvement. For instance, a Marshall representative conveyed that for centers that have not been visited by ASAP in recent times, it may be useful if a clearer understanding of ASAP's interest areas were identified prior to the visit. In this regard, Mr. Bryan O'Connor, NASA's Chief for Safety and Mission Assurance, stated that he would be interested in working more closely with the ASAP Chairman to help develop ASAP focus areas. Admiral Dyer replied that he sincerely appreciated this suggestion and looked forward to continued recommendations; but, he also noted that the ASAP currently is targeting four specific areas that the Administrator had asked the ASAP to address and provide recommendations to, as well as recent Congressional taskings that will require further involvement. Another participant added that perhaps the ASAP could gain more insight and confidence in NASA's new management team by selecting some key decision-making events to observe. Again, the Chairman agreed to consider the suggestion. Finally, the ASAP was encouraged to participate in center activities as they began if time and schedules allowed, so as to provide direct and better feedback.

SHUTTLE FLIGHT PREPARATIONS

Dr. Crippen reviewed preparations for the next Shuttle launch, noting that the last flight was operationally successful in several ways: a new imaging system was tested and the mission resupplied ISS, however foam continues to be a problem. The final stages of root cause analysis of the foam loss, redesign and testing of a new tank configuration are underway. The PAL ramp will be removed and some changes in bi-pod heater wiring will be made. MSFC is still analyzing the effects of PAL ramp removal. There is no firm schedule in place, however there are launch windows in May and August of this year, pending more certain outcomes of testing. Testing of repair materials will continue on the next flight, along with a new camera to gather more engineering data.

Mr. Frost commented that it is clear that it is not possible to eliminate all foam shedding with the present design, and urged that the critical risk assessments of the remaining potential shedding be performed as soon as possible.

RISK ANALYSIS AND ASSESSMENT ON CEV/CLV

Dr. Crippen stated that ASAP had seen impressive array of tools and considerations, and incorporation of lessons learned. The CLV is clearly in the initial stages of design, and the ASAP recognizes that as processes go forward, redesign may take place. NASA has taken a traditional approach—risk analysis is embedded in the design process. ASAP has harped on the subject to design with safety in mind wherever possible. The program has identified eleven top macro risks, which are mostly programmatic mission success risks. Other risks include uplift mass capability, workforce requirements, and obsolescence of human-rated flight systems.

CREW LAUNCH VEHICLE (CLV) ISSUES

Mr. Marshall began his comments by first noting that the ASAP had specifically asked MSFC's senior staff if funding was sufficient to address outstanding issues necessary for STS-121 and beyond shuttle mission success. He then commented that the ASAP emphatically was assured that having proper resources was not a limiting factor.

Turning his attention to CLV issues, Mr. Marshall reflected that there have been dramatic changes regarding CLV's development and employment since the ASAP last was briefed. In this regard, he noted that in the last 6 months the project office has been staffed fully and is operational, a concept of operations has been developed, key contractors have been identified, a baseline CLV design has been released for trade studies, and design analysis has begun. This said, Marshall noted that considering the early stage of the CLV's development, the ASAP naturally would expect continuous changes, improvement, and reviews in the future. Marshall also reported that the ASAP had asked if the Administration had undertaken a dedicated lessons-learned analysis from the Shuttle program for applicability to CLV's development to ensure that every opportunity for initial success is achieved? He then noted that the ASAP had likewise asked if a similar assessment of the CAIB recommendations, again as applicable to CLV, had been made. In response to both questions the reply was yes.

Marshall further reported that while the CLV program was new, the CLV management team is rich with experience. In this regard, Marshall commended the CLV management team for incorporating up-front risk analysis early on in their assessments. He added however that he had not heard the word "safety" used during all the discussions regarding the CLV and recommended that "safety" become the lexicon of success for the future space vehicles. Marshall concluded by noting that NASA's move to reduce complexity was on the mark and the beginning to a wonderful new chapter in manned space flight.

NEW LEGISLATION AFFECTING ASAP

Dr. Crippen addressed the impact of the NASA Authorization Act of 2005, which requires the ASAP to present an annual report to the Administrator and to Congress that includes an assessment of NASA's safety culture and actions to address remaining CAIB recommendations not cleared by the Stafford-Covey task force.

Mr. Marshall commented that he had great confidence in Dr. Crippen and Dr. Donahue's technical expertise in assessing the outstanding CAIB recommendations. However, he expressed concern that the bigger challenge for the ASAP would be to assess NASA's safety culture because of the lack of standardized metrics and standards dealing with safety culture within the agency and the lack of a uniform safety assessment database at each center. In this regard, he noted that if the ASAP was to be successful in meeting its tasking, a standardized, agency-wide, database on safety would be needed and that the agency should immediately undertake to develop such a resource. In this regard, Marshall recommends that NASA Headquarters, using a standard safety assessment tool (i.e., a PEP or PEP-like process), assess currently available information agency wide and format the information into a uniform database.

Ms. Grubbe suggested that NASA develop a robust and continuous focus on culture with a vision, goals, processes, measurement, and a continuous improvement process. What gets measured gets done. NASA's work is so important that the culture needs to support this effort. ASAP should offer guideposts, but NASA must do the work.

Mr. Marshall noted that the timing of the annual report will be a challenge for the ASAP. In this regard, he assessed that the ASAP was going to need some technical support and a budget to fulfill this requirement. Dr. Crippen and Mr. Marshall took an action on wording this recommendation.

Ms. Grubbe added that there is certainly work and correlative data extant on cultural alignments in organizations, regarding safety.

Dr. Crippen asked the panel if it wanted to make a recommendation on standardization of training issues.

Dr. Donahue replied that there was tension between standardization and unique center needs—one can have a core database, but the system can be tailored to each center. She recommended tying this observation in with a broader recommendation about workforce.

OTHER RECOMMENDATIONS AND DELIBERATION

- A closer integration of SMA with contracting with respect to safety should be pursued. Ms. Grubbe reiterated the recommendation to make contractor safety management issues transparent, continuous and uniform end to end. The goal should be to have one contractor safety management policy at MSFC. There should be continuous benchmarking with the private sector to achieve a world-class center. Extend the “EMR less than 1.0” hurdle to all MSFC contractors.
- Processes leading up to risk analysis relative to Return to Flight and External Tank should be transparent. The STS-121 risk analysis process and results should be reviewed by an independent entity, perhaps by NESC, for validation.

- ASAP should improve communications with centers, coordinate activities outside of quarterly meetings and determine how it will respond to its new reporting requirements.
- Mr. Frost commented that it was not clear that risk assessment procedures and criteria are directly relatable between the large and distributed programs the Agency manages, and recommended increasing consistency of these procedures, especially with regard to the components of integrated flight vehicles.

MEETING ADJOURNED

Dr. Crippen adjourned the meeting and opened the floor to questions and comments from the public observing the meeting.

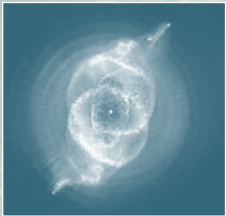
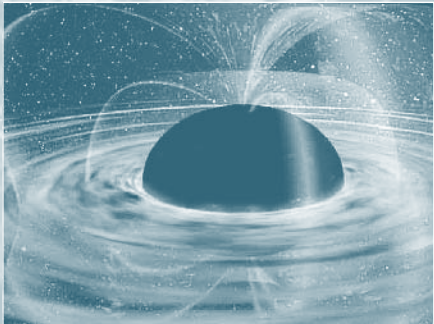
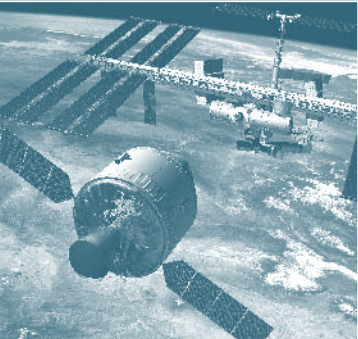
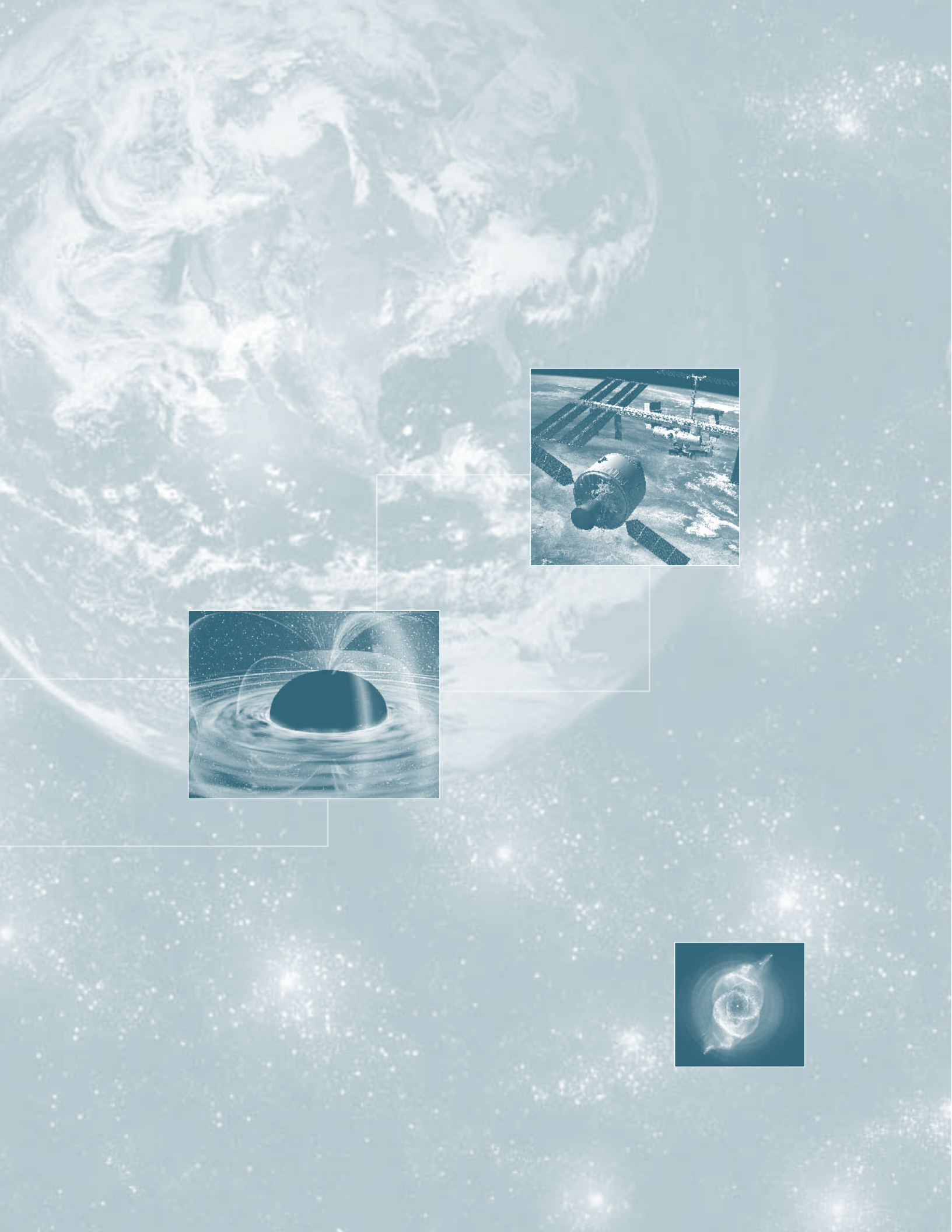
Mr. Don Nelson recommended that NASA consider reducing the number of flight crew on the next STS mission to promote ISS safe haven rescue if required.



FIRST QUARTER

V. Recommendations

ASAP



V. RECOMMENDATIONS

1. After our meetings at Marshall, we carried away concern regarding the External Tank. More specifically, we did not receive a crisp answer to the question—“How will the team determine the tank is ‘good to go?’”

The Panel would like to better understand the risk assessment process that will be used to: 1) clear the External Tank and modifications for launch; and 2) determine total mission risk for the STS-121 Go/No-Go decision at the FRR. Additionally, the Panel recommends that NASA use a second and independent set of eyes (e.g. NESC) to validate the risk assessment results and give management more confidence in the overall risk situation during the critical decision-making events leading to launch, operations, and recovery.